

## **REMARKS**

### **I. Introduction**

In response to the pending rejection, Applicant has amended claims 1, 8, 15 and 22, and has cancelled claims 2, 3, 9, 10, 16 and 17. Each of claims 1, 8 and 15 have been amended to recite the limitations in the respective dependent claims which have been cancelled. Claim 22 has been amended in a similar manner. In addition, new claims 23-27 have been added. Support for new claims 23-27 can be found throughout the specification, and specifically, for example, on page 5, lines 16-22. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art reference.

### **II. The Rejection Of The Claims Under 35 U.S.C. § 102**

Claims 1-5, 15-20 and 22 were rejected under 35 U.S.C. § 102 as being anticipated by USP No. 6,458,493 to Bula. Applicant respectfully submits that the pending claims are patentable over Bula for the following reasons.

As recited by independent claims 1, 8, 15 and 22, the non-resolvable optical proximity correction feature disposed between the features to be printed has: (1) a width dimension which is less than the width of a space separating the two features to be printed, and (2) is disposed in the center of the space separating the two features to be printed. Fig. 4 illustrates an example of the foregoing. As shown in Fig. 4, the width of the non-resolvable feature 18 is less than the spacing between adjacent features 20. Further, the non-resolvable feature 18 is disposed in the center of the space separating the features 20.

By sizing the non-resolvable feature (i.e., gray bar assist feature) to be a fraction of the space region less than the total space region between features, high order frequency terms for a given feature spacing can be increased. In addition, by placing the gray bar assist feature midway between the features that define a space region, the higher order frequency terms correspond to harmonics of the fundamental frequency of the local mask geometry. As a result, this allows for a decrease in the background intensity while at the same time limiting the decrease in the image fidelity or image contrast.

Turning to the cited prior art, it is clear that Bula does not disclose the foregoing elements recited by each of the amended independent claims. For example, referring to Fig. 2 of Bula, this embodiment discloses gray areas 10 positioned *adjacent* edges of isolated features, C1-C5, to be printed. However, neither of the two gray areas 10 positioned between features C4 and C5, are positioned in the center of the space between the features. Each of the gray areas 10 are positioned immediately *adjacent* an edge of the feature.

Referring to Fig. 4 of Bula, in this embodiment, while gray areas 11 are placed between features G1-G4, the gray areas fill the entire space between the features. Thus, this embodiment of Bula fails to disclose a gray area having a width dimension which is less than the width of a space separating the two features to be printed.

Accordingly, as anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983), for the foregoing reasons, it is clear that Bula does not anticipate any of the amended independent claims, or any claim dependent thereon.

**III. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable**

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Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as each independent claim is patentable for the reasons set forth above, it is respectfully submitted that all pending independent claims are also in condition for allowance.

**IV. New Claim 24**

New claim 24 substantially tracks original claim 1, with the recitation of the addition step of “adjusting the width, position and transmission coefficient of the non-resolvable optical proximity correction feature so as to maximize the process window for printing the plurality of resolvable features”. At a minimum, it does not appear that Bula discloses adjusting either the width or the position of the gray area in order to improve the available process window. As such, it is respectfully submitted that new claim 24, and the claims dependent thereon, are also patentable over Bula.

**V. Request For Notice Of Allowance**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited.

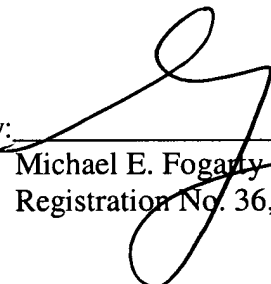
If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT, WILL & EMERY

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